

WHAT IS CLAIMED IS:

1. A lockup device for a hydrodynamic torque transmitting device that includes a front cover having a friction surface, an impeller fixed to the front cover to form a fluid chamber filled with working fluid, and a turbine arranged in the fluid
5 chamber and opposed to the impeller, the lockup device comprising:
a piston arranged between the front cover and the turbine, the piston including a pushing portion opposed to the friction surface, and being axially movable in accordance with a pressure of the working fluid;
a first clutch member including a first frictional coupling portion attached
10 axially movably and non-rotatably to the piston, and arranged axially between the friction surface and the pushing portion; and
an annular first coupling member including a first unit fixed to the front cover and being axially flexible, and a first pressure-contact portion provided at a radial end of the first unit and located axially between the first frictional coupling portion and
15 the pushing portion.
2. The lockup device of the hydrodynamic torque transmitting device according to claim 1, wherein
the first unit is fixed to the front cover by caulking.
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3. The lockup device of the hydrodynamic torque transmitting device according to claim 1, wherein
the first coupling member includes an inclination prevention mechanism that allows axial movement of the first pressure-contact portion without inclination with
25 respect to the first frictional coupling portion and the pushing portion.
4. The lockup device of the hydrodynamic torque transmitting device according to claim 3, wherein
the inclination prevention mechanism includes a plurality of first apertures
30 formed in the first unit and aligned in a rotational direction, and a plurality of second apertures formed in the first unit and aligned in the rotational direction; and
the plurality of second apertures are located radially inside or outside the plurality of first apertures, each have a center in the rotational direction located

between the first apertures in the rotational direction, each have opposite ends in the rotational direction that overlap in a radial direction of the device with the ends in the rotational direction of the first apertures, and are located such that the first and second apertures are located in alternating positions with respect to the radial direction.

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5. The lockup device of the hydrodynamic torque transmitting device according to claim 4, wherein

the first and second apertures are slit apertures each extending in the rotational direction.

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6. The lockup device of the hydrodynamic torque transmitting device according to claim 1, further comprising:

a restriction mechanism that allows the first unit to bend axially only within a predetermined range.

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7. The lockup device of the hydrodynamic torque transmitting device according to claim 1, further comprising:

a second clutch member attached axially movably and non-rotatably to the first clutch member, and including a second frictional coupling portion arranged axially between the first frictional coupling portion and the friction surface; and

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an annular second coupling member including an axially flexible second unit fixed to the front cover, and a second pressure-contact portion provided at a radial end of the second unit and located axially between the first and second frictional coupling portions.

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8. The lockup device of the hydrodynamic torque transmitting device according to claim 7, wherein

the second unit is fixed to the first unit and the front cover by caulking.

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9. A lockup device for a hydrodynamic torque transmitting device that includes a front cover including a friction surface, an impeller fixed to the front cover to form a fluid chamber filled with working fluid, and a turbine arranged in the fluid chamber and opposed to the impeller, the lockup device comprising:

a piston arranged between the front cover and the turbine and axially movable in response to pressure from the working fluid, the piston including a pushing portion opposed to the friction surface;

5 a first clutch member including a portion located radially outside the pushing portion and attached axially movably and non-rotatably to the piston, and a first frictional coupling portion arranged axially between the friction surface and the pushing portion;

10 a piston coupling mechanism arranged at the front cover to divide a space located axially between the front cover and the piston into a first working fluid chamber on a front cover side and a second working fluid chamber on a piston side, the piston coupling mechanism including an axially movable first pressure-contact portion arranged axially between the first frictional coupling portion and the pushing portion that axially movably couples the pushing portion and the first frictional coupling portion to the front cover; and

15 a pressure control mechanism that equalizes the pressures in the first and second working fluid chambers.

10. The lockup device of the hydrodynamic torque transmitting device according to claim 9, wherein
20 the pressure control mechanism is an oil passage provided in the piston coupling mechanism that serves to connect the first and second working fluid chambers to each other.

11. The lockup device of the hydrodynamic torque transmitting device
25 according to claim 9, further comprising:

a second clutch member attached axially movably and non-rotatably to the first clutch member, and including a second frictional coupling portion arranged axially between the first frictional coupling portion and the friction surface; and

30 the piston coupling mechanism further includes an axially movable second pressure-contact portion arranged axially between the first and second frictional coupling portions, and further divides the first working fluid chamber into a third working fluid chamber on the front cover side and a fourth working fluid chamber on the piston side, and

the pressure control mechanism can equalize pressures in the third, fourth and second working fluid chambers.

12. A lockup device for a hydrodynamic torque transmitting device including a
5 front cover including a friction surface, an impeller fixed to the front cover and forming a fluid chamber filled with working fluid, and a turbine arranged in the fluid chamber and opposed to the impeller, the lockup device comprising:

a piston arranged between the front cover and the turbine and axially movable in response to pressure from the working fluid, the piston including a pushing portion
10 opposed to the friction surface and engagement portions projecting toward the front cover from a portion radially outside the pushing portion;

a damper mechanism arranged on the turbine side of the piston for elastically coupling the turbine and the piston together;

a first clutch member axially movably and non-rotatably engaged with the
15 engagement portion, and including a first frictional coupling portion arranged axially between the friction surface and the pushing portion; and

a piston coupling mechanism provided at the front cover, the piston coupling mechanism including an axially movable first pressure-contact portion arranged axially between the first frictional coupling portion and the pushing portion, and
20 axially movably coupling the pushing portion and the first frictional coupling portion to the front cover.

13. The lockup device of the hydrodynamic torque transmitting device according to claim 12, wherein

25 the damper mechanism has a drive plate fixed to the piston, a driven plate arranged for rotation with the turbine, and elastic members supported by a surface on the turbine side of the piston and compressible in a rotational direction between the drive and driven plates, and

the engagement portions are formed to correspond to radial positions of
30 portions of the elastic members supported by the piston.

14. The lockup device of the hydrodynamic torque transmitting device according to claim 12, wherein

the engagement portions are respectively formed in a plurality of positions aligned in the rotational direction.

15. The lockup device of the hydrodynamic torque transmitting device
5 according to claim 12, further comprising:

a second clutch member attached axially movably and non-rotatably to the first clutch member, and including a second frictional coupling portion arranged axially between the first frictional coupling portion and the friction surface; and

the piston coupling mechanism further includes an axially movable second
10 pressure-contact portion arranged axially between the first and second frictional coupling portions.